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NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

ACR Appropriateness Criteria® occupational lung diseases.

Bibliographic Source(s)

Bacchus L, Shah RD, Chung JH, Crabtree TP, Heitkamp DE, Iannettoni MD, Johnson GB, Jokerst C, McComb BL, Saleh AG, Steiner RM, Mohammed TL, Ravenel JG, Expert Panel on Thoracic Imaging. ACR Appropriateness CriteriaÂ® occupational lung diseases [online publication]. Reston (VA): American College of Radiology (ACR); 2014. 7 p. [20 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

ACR Appropriateness Criteria®

Clinical Condition: Occupational Lung Diseases

Variant 1: Silica exposure, suspected silicosis.

Radiologic Procedure	Rating	Comments	RRL*
X-ray chest	9	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢
CT chest without contrast	9	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢☢☢
CT chest with contrast	3		☢☢☢
FDG-PET/CT chest	3		☢☢☢☢
CT chest without and with contrast	2		☢☢☢
MRI chest without and with contrast	2		O
MRI chest without contrast	2		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative**

Radiologic Procedure	Rating	Comments	RRL*
			Radiation Level

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Coal dust exposure, suspected pneumoconiosis.

Radiologic Procedure	Rating	Comments	RRL*
CT chest without contrast	9	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢☢☢
X-ray chest	8	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢
CT chest with contrast	4		☢☢☢
FDG-PET/CT chest	3		☢☢☢☢
MRI chest without and with contrast	2		O
MRI chest without contrast	2		O
CT chest without and with contrast	2		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Asbestos exposure, suspected interstitial lung disease.

Radiologic Procedure	Rating	Comments	RRL*
CT chest without contrast	9	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢☢☢
X-ray chest	8	X-ray chest and CT chest without contrast are complementary. Both should be performed.	☢
CT chest with contrast	3		☢☢☢
FDG-PET/CT chest	3		☢☢☢☢
MRI chest without and with contrast	2		O
MRI chest without contrast	2		O
CT chest without and with contrast	2		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: Asbestos exposure, suspected mesothelioma.

Radiologic Procedure	Rating	Comments	RRL*
CT chest with contrast	9	X-ray chest and CT chest are complementary. Both should be performed.	☢☢☢
X-ray chest	8	X-ray chest and CT chest are complementary. Both should be performed.	☢
CT chest without contrast	7	X-ray chest and CT chest are complementary. Both should be performed.	☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation**

Radiologic Procedure	Rating	Comments	RRL*
FDG-PET/CT chest	6		☢☢☢☢
MRI chest without and with contrast	5	This procedure may be appropriate, but there was disagreement among panel members on the appropriateness rating as defined by the panel's median rating.	O
CT chest without and with contrast	3		☢☢☢
MRI chest without contrast	3		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Summary of Literature Review

Introduction/Background

Occupational lung disease is a broad category of disease entities characterized by a non-neoplastic reaction of the lung parenchyma to inhaled aerosolized particles found in the environment, typically from work-related exposure. The term "pneumoconiosis" refers to diseases associated with the inhalation of inorganic mineral dusts. This paper reviews the 3 most common inorganic occupational lung diseases: silicosis, coal worker pneumoconiosis, and asbestosis. The less common inorganic occupational lung diseases include, but are not limited to, berylliosis, talcosis, hard metal pneumoconiosis, and flavorings-related lung disease.

Overview of Imaging Modalities

Chest radiography is one of the primary imaging modalities used to evaluate the pneumoconioses and has traditionally been performed by analog technique. The International Labor Organization (ILO) developed a well-recognized classification scheme for chest radiography to objectively classify lung opacities based on their size, shape, and profusion.

However, with evolution of modern imaging techniques such as digital radiography, analog radiography has largely been replaced. In 2011 the ILO updated its guidelines for evaluation of pneumoconiosis by extending the applicability of its classification scheme to digital radiography.

There is still no standardized scoring system available for high-resolution computed tomography (HRCT), even though there is significant improvement of resolution and improved ability to detect more subtle abnormalities as compared to chest radiography. Despite this fact, HRCT is still a valuable tool for the evaluation of lungs in patients with this category of disease.

Magnetic resonance imaging (MRI), though known to be limited in detecting abnormalities in the predominantly air-filled lungs, may have a role in evaluation of some parenchymal and pleural abnormalities. Positron emission tomography (PET) also has a limited role for the evaluation of the occupational lung diseases, and its role in staging malignant mesothelioma is controversial. The specific imaging findings associated with occupational lung diseases are well described in the literature and are beyond the scope of this article.

Discussion of the Imaging Modalities by Variant

Variant 1: Silica Exposure, Suspected Silicosis

Chest radiography and HRCT are the primary imaging modalities employed in the evaluation of silicosis. However, HRCT has been shown in the literature as being more sensitive for the detection of parenchymal findings associated with silica-related lung disease. A group of authors studied 90 patients exposed to silica in mine machinery manufacturing workers. They observed that the number of small opacities detected by HRCT scans were significantly higher than those seen in radiography in all lung zones. When these researchers compared radiography versus HRCT for the detection of complications of silicosis, there was a statistically significant increase in the detectability of bulla, emphysema, and pleural changes in addition to lymphadenopathy. Another group demonstrated that 10 of 26 patients who were determined to have simple silicosis on chest radiography were upgraded to complicated silicosis (progressive massive fibrosis [PMF]) at HRCT examination. Similarly, in another study, 13 of 32 individuals with a history of silica dust exposure and a normal chest radiograph demonstrated evidence of silicosis on HRCT.

Both severities of findings on chest radiography and HRCT correlate with a reduction in lung function in patients with silicosis. A group of authors studied 76 men with proven silicosis and demonstrated a linear relationship between the severity of both HRCT and chest radiography findings with respect to lung functional parameters. They determined that the severity of PMF had an inverse correlation with patients' pulmonary function tests. Furthermore, they determined that although both chest radiography and HRCT demonstrated an inverse relationship to all lung functional parameters, the strongest relationship was comparing HRCT findings of PMF and nodular profusion index to lung functional parameters. They conclude by suggesting that CT may be used to indirectly quantify functional impairment. Interestingly, another group of authors observed that small opacities on HRCT had no significant negative effect on lung function. However, large opacities were associated with a decrease in diffusing capacity of the lung for carbon monoxide. The inference is that the size of lung opacities correlates with severity of disease, a conclusion similar to that reached by the first group. Another study comparing HRCT to pulmonary function tests concluded that profusion of opacities on HRCT correlates with functional deterioration as well.

In another study, the authors used inspiratory and expiratory thin CT scans in 37 patients with silicosis and determined that air trapping was the best measure of assessment of obstructive disease in this population.

Variant 2: Coal Dust Exposure, Suspected Pneumoconiosis

Recent literature interrogation specifically on the data for imaging appropriateness of coal worker pneumoconiosis yielded few results. However, one article compared chest radiography with HRCT in patients with early and low-grade coal worker pneumoconiosis and questioned the utility of radiography in screening of these patients. Their study population included a final population of 67 patients with at least 10 years of exposure to coal dust and no history of pulmonary disease. They used the ILO grading schematic for chest radiography and the Hosoda-Shida Classification of CT for pneumoconiosis to categorize lung abnormalities. In addition to demonstrating improved sensitivity for detection of lung opacities by HRCT, the investigators also observed a high discordance rate between chest radiography and HRCT. In the study, 28 of 67 patients (42%) initially categorized with chest radiography were placed in a different category of lung abnormality after HRCT assessment. The authors conclude that HRCT should be used in the screening of this specific patient population because HRCT is more sensitive and better categorizes the lung abnormality as compared to chest radiography.

Recent advancements in imaging technology have led to the study of PMF using MRI. One study compared CT and MRI findings of 22 cases of histologically confirmed PMF in 20 coal miners and concluded that there is potential clinical use for MRI in evaluation of PMF lesions in pneumoconiosis. The investigators observed that all of the lesions detected on CT were identified on the MRI comparison study and MRI interpretations did not demonstrate false-positive or false-negative findings with respect to the presence of PMF on CT. The authors state MRI could be an alternative modality, particularly if minimizing exposure to ionizing radiation is of concern. They also state that additional studies are warranted to establish the clinical value of MRI in patients with various pulmonary diseases.

There are limited data on PET imaging of suspected lung cancer in patients with coal worker pneumoconiosis. However, one study observed 6 cases where PET was used in this specific setting. The authors observed the presence of 18 of 19 nodules that were hypermetabolic in the range typically seen with malignancy. However, none of these nodules were determined to be malignant, thus they concluded that PET imaging is of limited utility given the high false-positive rate.

Variants 3 and 4: Asbestos Exposure, Suspected Interstitial Lung Disease or Mesothelioma

Chest radiography is the primary method of screening for asbestos-related interstitial lung diseases; however, CT is more sensitive for the detection of lung abnormalities and complications related to asbestos exposure. A group of researchers studied 266 employees from an asbestos cement plant that used chrysotile exclusively. Chest radiography detected abnormal findings in approximately 21% of the employees, whereas HRCT detected 67%. Interestingly, the investigators observed that lung function correlated with parenchymal and visceral pleural abnormalities on HRCT. Another group studied chest CT screening in asbestos-exposed workers and observed 6 lung cancers, including 1 pleural mesothelioma, identified by CT, and only 1 cancer identified by chest radiography. The authors concluded that despite additional confounding findings, CT was better than radiography in detecting lung cancer in individuals exposed to asbestos. Although lacking a chest radiograph control group, another study assessed the prevalence of lung cancer using low-dose multidetector CT in a cohort of 187 asbestos-exposed high-risk patients. The investigators observed 8 lung malignancies in 187 individuals. In a ninth individual there was strong suspicion for lung malignancy, but that patient died before further workup. In an additional study, the authors demonstrated the progression of mild asbestos-related lung parenchymal abnormalities in 81% of patients after a 3-year to 5-year follow-up using HRCT.

A study performed by another group of authors demonstrated improved detection of pleural abnormalities by HRCT over chest radiography alone in a cohort of individuals exposed to vermiculite-containing asbestos. The authors detected pleural abnormalities by HRCT in nearly 28% of the individuals whose chest radiographs were indeterminate. Similarly, another group of investigators observed that chest radiography could not detect pleural plaques located in a paravertebral location, whereas CT was able to identify 89 paravertebral pleural plaques. Finally, another study evaluated the use of MRI in assessment of asbestos-related pleural abnormalities. The researchers observed a comparable interobserver agreement for the detection of pleural plaques and higher interobserver agreement in the detection of pleural thickening and pleural effusion than compared with CT. For the detection of mesothelioma, they found no significant difference between the kappa values for MRI and CT. Furthermore, an additional study suggested that apparent diffusion coefficient maps may be useful in discriminating different histological subtypes of malignant pleural mesothelioma and may complement other MRI sequences in the evaluation of mesothelioma as well.

A group of investigators studied a cohort of 31 patients with pleural disease related to asbestos exposure to determine the use of PET/CT in discriminating between benign pleural disease and malignant mesothelioma. The authors observed that PET/CT identified 15 of 17 cases of malignant mesothelioma based on metabolic activity. Thirteen of 14 benign pleural lesions were considered negative by PET/CT. Using a SUVmax threshold of 2.2, the sensitivity, specificity, positive predictive value, and negative predictive value were 94.1%, 100%, 100%, and 93.3% respectively. They concluded that PET/CT is useful for discriminating benign pleural disease from malignant mesothelioma.

Another group of authors retrospectively studied the use of PET/CT staging of malignant pleural mesothelioma in 20 patients undergoing trimodality therapy. They observed that PET/CT failed to identify advanced tumor stage and had a sensitivity of only 11% for the detection of mediastinal nodal disease. They concluded that the role for PET/CT is in excluding patients with metastatic disease outside the affected hemithorax prior to extrapleural pneumonectomy.

Summary of Recommendations

- Workup of occupational lung diseases usually begins with routine chest radiography. However, the greater resolution of CT chest over chest radiography allows for more sensitive and accurate detection and characterization of lung and pleural abnormalities.
- CT chest without contrast suffices for routine analysis of patients with occupational lung disease in most scenarios. In some situations, utilizing contrast-enhanced CT chest may be of utility if there is a clinical question of pulmonary embolism and in assessing for adenopathy/masses. Rarely is there a need for performing CT chest without and with contrast.
- Fluorine-18-2-fluoro-2-deoxy-D-glucose positron-emission tomography (FDG-PET) may have utility in patients with suspected mesothelioma in terms of defining mediastinal and distal metastatic disease and perhaps localizing a potential biopsy site. Otherwise, the role of FDG-PET is limited.
- In general, MRI is not regarded as appropriate in the evaluation of occupational lung diseases.

Abbreviations

- CT, computed tomography
- FDG-PET, fluorine-18-2-fluoro-2-deoxy-D-glucose positron-emission tomography
- MRI, magnetic resonance imaging

Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
O	0 mSv	0 mSv
☢	<0.1 mSv	<0.03 mSv
☢☢	0.1-1 mSv	0.03-0.3 mSv
☢☢☢	1-10 mSv	0.3-3 mSv
☢☢☢☢	10-30 mSv	3-10 mSv
☢☢☢☢☢	30-100 mSv	10-30 mSv
*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "Varies."		

Clinical Algorithm(s)

Algorithms were not developed from criteria guidelines.

Scope

Disease/Condition(s)

Occupational lung diseases including:

- Silicosis
- Coal worker pneumoconiosis
- Asbestosis
- Mesothelioma

Guideline Category

Diagnosis

Evaluation

Clinical Specialty

Family Practice

Internal Medicine

Pulmonary Medicine

Radiation Oncology

Radiology

Intended Users

Health Plans

Hospitals

Managed Care Organizations

Physicians

Utilization Management

Guideline Objective(s)

To evaluate the appropriateness of radiologic procedures in the initial evaluation of patients with suspected occupational lung diseases

Target Population

Patients with suspected occupational lung diseases

Interventions and Practices Considered

1. Computed tomography (CT), chest
    - Without contrast
    - With contrast
    - Without and with contrast
2. X-ray, chest
3. Fluorine-18-2-fluoro-2-deoxy-D-glucose positron-emission tomography (FDG-PET)/CT, chest
4. Magnetic resonance imaging (MRI), chest
    - Without and with contrast
    - Without contrast

Major Outcomes Considered

- Utility of radiologic examinations in differential diagnosis
- Sensitivity, specificity, positive predictive value, and negative predictive value of radiologic examinations
- Rate of detection of abnormal findings
- Rate of false-negative and false-positive findings

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search Summary

A literature search was conducted in October 2012 to identify evidence for the *ACR Appropriateness Criteria® Occupational Lung Diseases* topic. Using the search strategy described the literature search companion (see the "Availability of Companion Documents" field), 255 articles were found. Eighteen articles were used in the topic. Two hundred thirty-seven articles were not used due to either poor study design, the articles were not relevant or generalizable to the topic, or the results were unclear, misinterpreted, or biased.

The author added two citations from bibliographies, Web sites, or books that were not found in the literature search.

See also the American College of Radiology (ACR) Appropriateness Criteria® literature search process document (see the "Availability of Companion Documents" field) for further information.

Number of Source Documents

Eighteen articles were used in the topic. The author added two citations from bibliographies, Web sites, or books that were not found in the literature search.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Study Quality Category Definitions

Category 1 - The study is well-designed and accounts for common biases.

Category 2 - The study is moderately well-designed and accounts for most common biases.

Category 3 - There are important study design limitations.

Category 4 - The study is not useful as primary evidence. The article may not be a clinical study or the study design is invalid, or conclusions are based on expert consensus. For example:

a. The study does not meet the criteria for or is not a hypothesis-based clinical study (e.g., a book chapter or case report or case series

description).
b. The study may synthesize and draw conclusions about several studies such as a literature review article or book chapter but is not primary evidence.
c. The study is an expert opinion or consensus document.

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The topic author assesses the literature then drafts or revises the narrative summarizing the evidence found in the literature. American College of Radiology (ACR) staff drafts an evidence table based on the analysis of the selected literature. These tables rate the study quality for each article included in the narrative.

The expert panel reviews the narrative, evidence table and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the variant table(s). Each individual panel member assigns a rating based on his/her interpretation of the available evidence.

More information about the evidence table development process can be found in the ACR Appropriateness Criteria® Evidence Table Development documents (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Rating Appropriateness

The American College of Radiology (ACR) Appropriateness Criteria (AC) methodology is based on the RAND Appropriateness Method. The appropriateness ratings for each of the procedures or treatments included in the AC topics are determined using a modified Delphi method. A series of surveys are conducted to elicit each panelist's expert interpretation of the evidence, based on the available data, regarding the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario. The expert panel members review the evidence presented and assess the risks or harms of doing the procedure balanced with the benefits of performing the procedure. The direct or indirect costs of a procedure are not considered as a risk or harm when determining appropriateness. When the evidence for a specific topic and variant is uncertain or incomplete, expert opinion may supplement the available evidence or may be the sole source for assessing the appropriateness.

The appropriateness is represented on an ordinal scale that uses integers from 1 to 9 grouped into three categories: 1, 2, or 3 are in the category "usually not appropriate" where the harms of doing the procedure outweigh the benefits; and 7, 8, or 9 are in the category "usually appropriate" where the benefits of doing a procedure outweigh the harms or risks. The middle category, designated "may be appropriate," is represented by 4, 5, or 6 on the scale. The middle category is when the risks and benefits are equivocal or unclear, the dispersion of the individual ratings from the group median rating is too large (i.e., disagreement), the evidence is contradictory or unclear, or there are special circumstances or subpopulations which could influence the risks or benefits that are embedded in the variant.

The ratings assigned by each panel member are presented in a table displaying the frequency distribution of the ratings without identifying which members provided any particular rating. To determine the panel's recommendation, the rating category that contains the median group rating without disagreement is selected. This may be determined after either the first or second rating round. If there is disagreement after the second rating round, the recommendation is "May be appropriate."

This modified Delphi method enables each panelist to articulate his or her individual interpretations of the evidence or expert opinion without excessive influence from fellow panelists in a simple, standardized and economical process. For additional information on the ratings process see the Rating Round Information document on the ACR Web site.

Additional methodology documents, including a more detailed explanation of the complete topic development process and all ACR AC topics can be found on the ACR Web site (see also the "Availability of Companion Documents" field).

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The recommendations are based on analysis of the current literature and expert panel consensus.

Summary of Evidence

Of the 20 references cited in the *ACR Appropriateness Criteria® Occupational Lung Diseases* document, all of them are categorized as diagnostic references, 3 well-designed studies, 6 good quality studies, and 5 quality studies that may have design limitations. There are 6 references that may not be useful as primary evidence.

While there are references that report on studies with design limitations, 9 well-designed or good quality studies provide good evidence.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Selection of appropriate radiologic imaging procedures for patients with occupational lung diseases

Potential Harms

Positron-emission tomography imaging has a high rate of false-positive results.

Relative Radiation Level

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level (RRL) indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, both because of organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure).

For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared to those specified for adults. Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® Radiation Dose Assessment Introduction document (see the "Availability of Companion Documents" field).

Qualifying Statements

Qualifying Statements

The American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Bacchus L, Shah RD, Chung JH, Crabtree TP, Heitkamp DE, Iannettoni MD, Johnson GB, Jokerst C, McComb BL, Saleh AG, Steiner RM, Mohammed TL, Ravenel JG, Expert Panel on Thoracic Imaging. ACR Appropriateness CriteriaÂ® occupational lung diseases [online publication]. Reston (VA): American College of Radiology (ACR); 2014. 7 p. [20 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2014

Guideline Developer(s)

American College of Radiology - Medical Specialty Society

Source(s) of Funding

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

Guideline Committee

Committee on Appropriateness Criteria, Expert Panel on Thoracic Imaging

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the American College of Radiology (ACR) Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

Availability of Companion Documents

The following are available:

- ACR Appropriateness Criteria®. Overview. Reston (VA): American College of Radiology; 2015 Feb. 3 p. Electronic copies: Available from the American College of Radiology (ACR) Web site.
- ACR Appropriateness Criteria®. Literature search process. Reston (VA): American College of Radiology; 2015 Feb. 1 p. Electronic

copies: Available from the ACR Web site .

- ACR Appropriateness Criteria®. Evidence table development – diagnostic studies. Reston (VA): American College of Radiology; 2013 Nov. 3 p. Electronic copies: Available from the ACR Web site .
- ACR Appropriateness Criteria®. Radiation dose assessment introduction. Reston (VA): American College of Radiology; 2015 Feb. 3 p. Electronic copies: Available from the ACR Web site .
- ACR Appropriateness Criteria®. Procedure information. Reston (VA): American College of Radiology; 2015 Feb. 2 p. Electronic copies: Available from the ACR Web site .
- ACR Appropriateness Criteria® occupational lung diseases. Evidence table. Reston (VA): American College of Radiology; 2014. 11 p. Electronic copies: Available from the ACR Web site .
- ACR Appropriateness Criteria® occupational lung diseases. Literature search. Reston (VA): American College of Radiology; 2014. 1 p. Electronic copies: Available from the ACR Web site .

Patient Resources

None available

NGC Status

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